



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

October 31, 2012

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-8510002, issued to ANTERO RESOURCES APPALACHIAN CORPORATION, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, well operators report of well work, is to be submitted to this office within 90 days of completion of drilling, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.

James Martin
Chief

Operator's Well No: KUHN UNIT 1H
Farm Name: CAMPBELL, JOHN A. AND LIND,
API Well Number: 47-8510002
Permit Type: Horizontal 6A Well
Date Issued: 10/31/2012

Promoting a healthy environment.

05/31/2024



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PERMIT MODIFICATION APPROVAL

January 30, 2013

ANTERO RESOURCES APPALACHIAN CORPORATION
1625 17TH STREET, SUITE 300
DENVER, CO 80202

Re: Permit Modification Approval for API Number 8510002 , Well #: KUHN UNIT 1H
MODIFIED TOP HOLE LOCATION

Oil and Gas Operator:

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "Natalie Paynter".

for

Gene Smith
Regulatory/Compliance Manager
Office of Oil and Gas

Promoting a healthy environment.

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PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
2. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the fill material shall be within plus or minus 2% of the optimum moisture content as determined by the standard proctor density test. Each lift must meet 95 % compaction of the optimum density based on results from the standard proctor density test of the actual soils used in specific engineered fill sites. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
3. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
4. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
5. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.

05/31/2024

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
W.VA. CODE §22-6A - WELL WORK PERMIT APPLICATION

85 4 562

1) Well Operator: Antero Resources Appalachian Corporation 494488557 085- Ritchie Union Pullman 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Kuhn Unit 1H Well Pad Name: John Campbell North Pad

3 Elevation, current ground: ~1012' Elevation, proposed post-construction: 1014'

4) Well Type: (a) Gas Oil
Other
(b) If Gas: Shallow Deep
Horizontal

5) Existing Pad? Yes or No: No

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Marcellus Shale: 6,800' TVD, Anticipated Thickness- 50' feet, Associated Pressure- 3,000#

7) Proposed Total Vertical Depth: 6,800' TVD

8) Formation at Total Vertical Depth: Marcellus Shale

9) Proposed Total Measured Depth: 13,500' MD

10) Approximate Fresh Water Strata Depths: 60', 72', 79', 120', 165', 170', 192', 230', 295', 338'

11) Method to Determine Fresh Water Depth: Offset well records

12) Approximate Saltwater Depths: 1850'

13) Approximate Coal Seam Depths: None available

14) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated ✓

15) Does land contain coal seams tributary or adjacent to, active mine? No

16) Describe proposed well work: Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale

17) Describe fracturing/stimulating methods in detail:
Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 9.98 acres

19) Area to be disturbed for well pad only, less access road (acres): 2.65 acres

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WW - 6B
(1/12)

20)

CASING AND TUBING PROGRAM

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	20"	New	H-40	94#	40'	40'	CTS
Fresh Water	13-3/8"	New	J-55	54.5#	390'	390'	CTS, 542 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2540'	2540'	CTS, 1034 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	13500'	13500'	3301 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7200'	
Liners							

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	20"	24"	0.438"	1530	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & Tall - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11200		
Liners						

PACKERS

Kind:				
Sizes:				
Depths Set:				

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21) Describe centralizer placement for each casing string.

Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

22) Describe all cement additives associated with each cement type.

Conductor: no additives, grout cement.

Surface: Class A cement with 2% calcium and 1/4 lb flake, 5 gallons of clay treat

Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

23) Proposed borehole conditioning procedures.

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls ~~fresh~~ water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.

Duc

APPROVED
DATE
OCT 23 2022
Environmental

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

**CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE**

Operator Name Antero Resources Appalachian Corporation OP Code 494488557

Watershed Right Fork of Slab Creek Quadrangle Pullman 7.5'

Elevation 1014' County Ritchie District Union

Description of anticipated Pit Waste: Drilling and Flowback Fluids and Cuttings

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a synthetic liner be used in the pit? Yes If so, what mil.? 60 mil

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number Future permitted well locations when applicable. API# will be provided on Form WR-34)
- Off Site Disposal (Meadowfill Landfill Permit #SWF-1032-98)
- Other (Explain _____)

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Surface - Air/Freshwater, Intermediate - Dust/Stiff Foam, Production - Water Based Mud
-If oil based, what type? Synthetic, petroleum, etc. N/A

Additives to be used? Please See Attachment

Will closed loop system be used? Yes

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Removed offsite and taken to landfill

-If left in pit and plan to solidify what medium will be used? Cement, lime, N/A

-Landfill or offsite name/permit number? Meadowfill Landfill (Permit #SWF-1032-98)

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

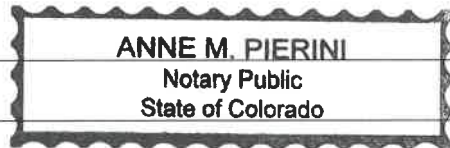
Company Official Signature 

Company Official (Typed Name) Gerard G. Alberts

Company Official Title Environmental & Regulatory Manager

Subscribed and sworn before me this 30 day of AUGUST, 20 12





Notary Public

My commission expires _____

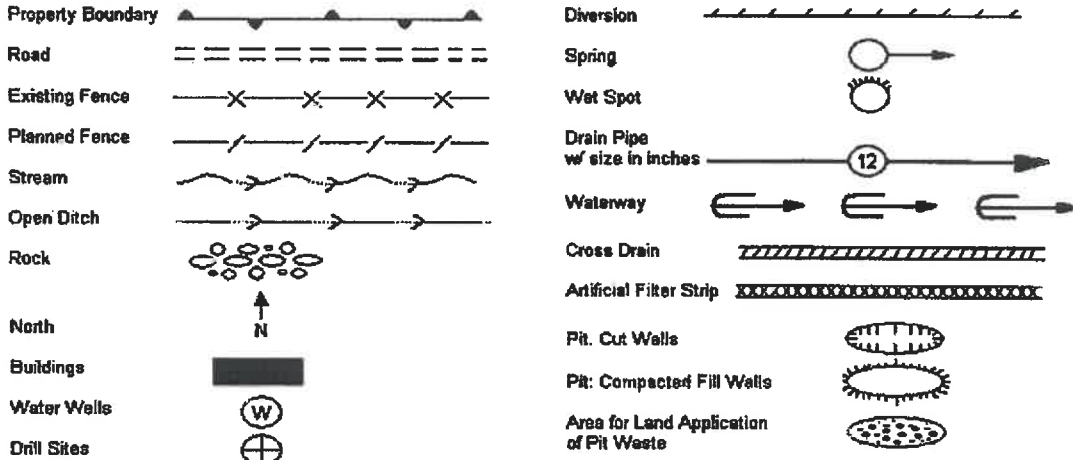
My Commission Expires: 6/22/16

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New Pad (2.65) + New Frac Pit 1 (3.12) + New Access Roads (3.02) + Waste & Spoil Pads/Piles (1.19) = 9.98 Acres

Proposed Revegetation Treatment: Acres Disturbed 9.98 Prevegetation pH 6.0

Lime 4 Tons/acre or to correct to pH 6.5

Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum)

Mulch 2-3 Tons/acre Hay or straw or Wood Fiber (will be used where needed)

Seed Mixtures

Seed Type	Area I (Temporary) lbs/acre	Seed Type	Area II (Permanent) lbs/acre
Tall Fescue	45	Tall Fescue	45
Perennial Rye Grass	20	Perennial Rye Grass	20

Attach:
Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Daniel Williams

Comments: proposed to mulch all acid areas - no less than 2 ton per acre

Title: Oil Gas Inspector Date: 10-18-12

Field Reviewed? Yes No

OCT 24 2012



David Miller
10-18-12

Well Site Safety Plan Antero Resources

**Well Name: Villers Unit 1H, Villers Unit 2H, Kuhn Unit 1H,
Campbell Unit 1H, Campbell Unit 2H, Pullman
Unit 1H, Pullman Unit 2H & Snodgrass Unit 2H**

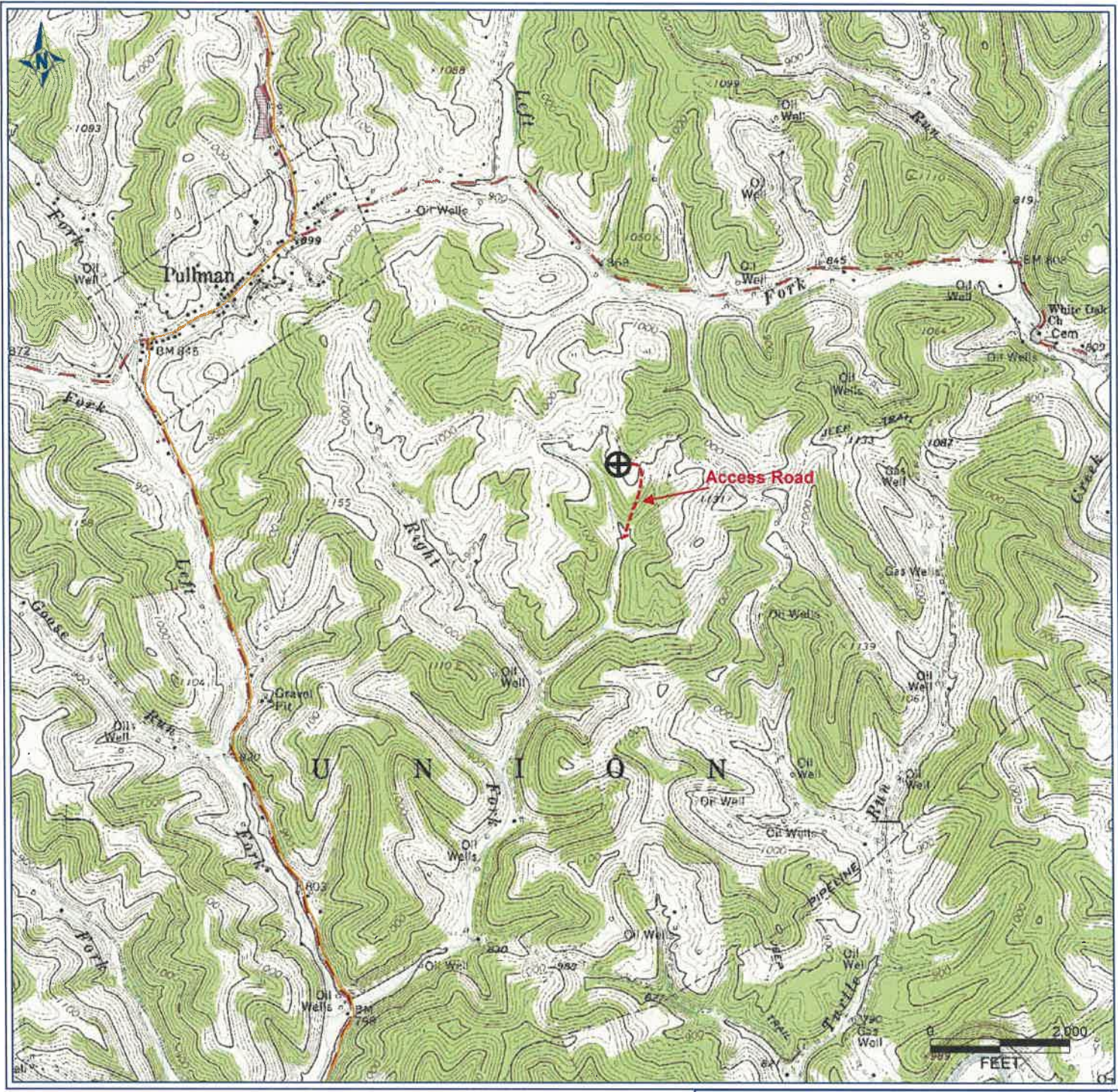
Pad Location: JOHN CAMPBELL NORTH PAD
Ritchie County/ Union District

GPS Coordinates: Lat 39°10'51.46"/Long 80°55'47.81"

Driving Directions:

FROM EAST: From the intersection of I-79 and Hwy 50 near Bridgeport WV, head west on Hwy 50 for ~39.6 miles. Turn LEFT onto W Virginia 74 S, and follow for ~7.4 miles. Turn RIGHT onto Co Rd 9 (Main St) and continue for ~0.1 miles. Turn LEFT onto Co Rd 7/9 (Slab Creek Road) and continue for ~0.7 miles. Continue onto Co Rd 9/7/Left Fork Turtle Run for ~0.7 miles. Look for rig signs and location on the right. Drill site is right off the road.

FROM WEST: From the intersection of I-77 and Hwy 50 near Parkersburg WV, head east on Hwy 50 for ~32.3 miles. Turn RIGHT onto W Virginia 74 S, and follow for ~7.4 miles. Turn LEFT onto Co Rd 7/9 (Slab Creek Road) and continue for ~0.7 miles. Continue onto Co Rd 9/7/Left Fork Turtle Run for ~0.7 miles. Look for rig signs and location on the right. Drill site is right off the road.



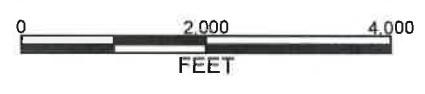
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Antero Resources Corporation

APPALACHIAN BASIN

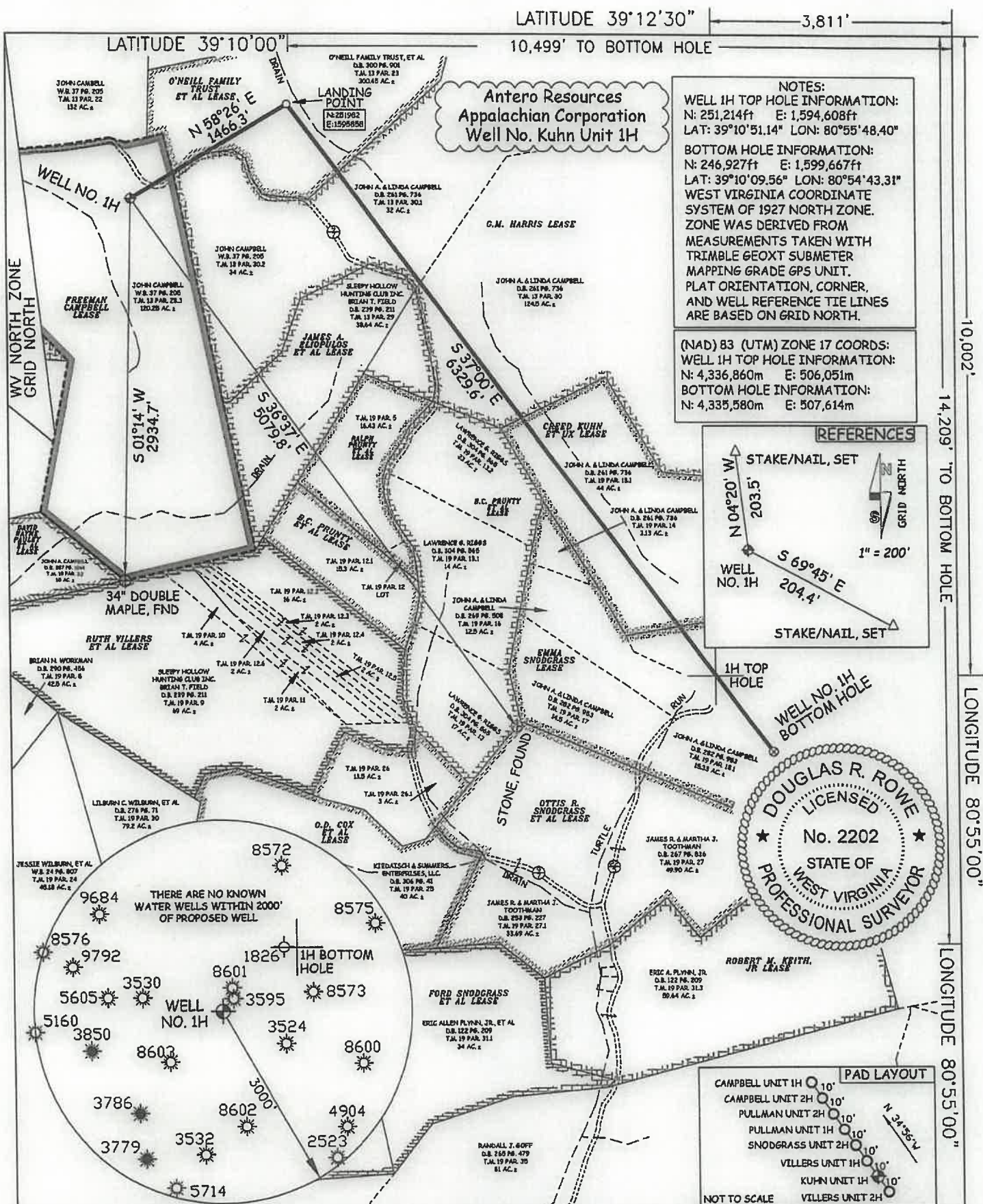
Kuhn Unit 1H
Ritchie County



REMARKS
 QUADRANGLE: PULLMAN
 WATERSHED: RIGHT FORK OF SLAB CREEK
 DISTRICT: UNION

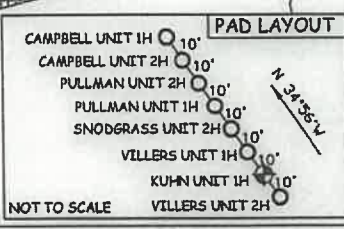
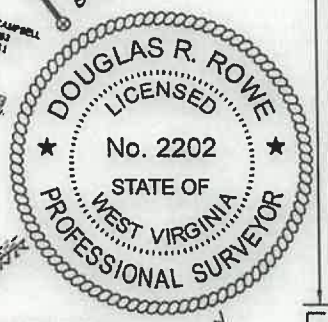
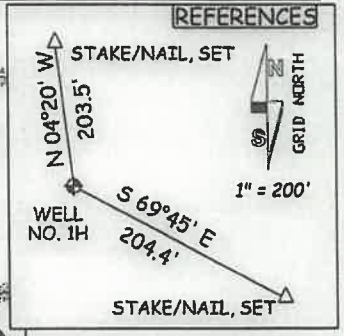
Date: 8/27/2012

05/31/2024



NOTES:
 WELL 1H TOP HOLE INFORMATION:
 N: 251,214ft E: 1,594,608ft
 LAT: 39°10'51.14" LON: 80°55'48.40"
 BOTTOM HOLE INFORMATION:
 N: 246,927ft E: 1,599,667ft
 LAT: 39°10'09.56" LON: 80°54'43.31"
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE 6EOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
 WELL 1H TOP HOLE INFORMATION:
 N: 4,336,860m E: 506,051m
 BOTTOM HOLE INFORMATION:
 N: 4,335,580m E: 507,614m



JOB # 12-048WA
 DRAWING # KUHN1HR2
 SCALE 1" = 1000'
 MINIMUM DEGREE OF ACCURACY SUBMETER
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
 WILLOW LAND SURVEYING PLLC
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

LEGEND
 - - - - - Surface Owner Boundary Lines +/-
 - - - - - Interior Surface Tracts +/-
 - - - - - Existing Fence
 ⊕ Found monument, as noted

DOUGLAS R. ROWE P.S. 2202
 DATE 11/09/12
 OPERATOR'S WELL # KUHN UNIT #1H
 API WELL # 47 - 085 - 10002416A MOD
 STATE COUNTY PERMIT

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS
 WELL TYPE: OIL ___ GAS LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS") PRODUCTION STORAGE ___ DEEP ___ SHALLOW
 LOCATION: ELEVATION 1,014' WATERSHED RIGHT FORK OF SLAB CREEK
 QUADRANGLE PULLMAN 7.5' DISTRICT UNION COUNTY RITCHIE
 SURFACE OWNER JOHN A. & LINDA J. CAMPBELL ACREAGE 120.25 ACRES +/-
 OIL & GAS ROYALTY OWNER FREEMAN CAMPBELL, O'NEILL FAMILY TRUST ET AL; G.M. HARRIS; CREED KUHN ET UX; EMMA SNODGRASS LEASE ACREAGE 120.25 ACRES +/- 300 ACRES +/- 20 ACRES +/- 93 ACRES +/- 65 ACRES +/-
 PROPOSED WORK: DRILL CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) ___
 TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,800' TVD 13,500' MD
 WELL OPERATOR ANTERO RESOURCES APPALACHIAN CORP. DESIGNATED AGENT CT CORPORATION SYSTEM
 ADDRESS 1625 17TH STREET ADDRESS 5400 D BIG TYLER ROAD
 DENVER, CO 80202 CHARLESTON, WV 25313

10,002' TO BOTTOM HOLE
 14,209' TO BOTTOM HOLE
 LONGITUDE 80°55'00"
 LONGITUDE 80°55'00"
 COUNTY NAME PERMIT

WW-6A1

Operator's Well Number Kuhn Unit 1H

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Freeman Campbell Lease</u>			
Freeman Campbell, et ux	Key Oil Company	1/8	LB 0227/0243
Key Oil Company	Antero Resources Appalachian Corp.	*Partial Assignment of Oil and gas Leases	LB 0253/0747
<u>O'Neil Family Trust et al Lease</u>			
Robert E. O'Neil	Key Oil Company	1/8	LB 0224/0433
Anna L. Lockhart, Individually & as Trustee of O. Glenn Lockhart Estate	Key Oil Company	1/8	LB 0224/0437
Betty J. O'Neill	Key Oil Company	1/8	LB 0233/0239
Nancy Antill & Mary Francis Harms	Key Oil Company	1/8	LB 0233/0244
Nancy Antill & Mary Francis Harms	Key Oil Company	1/8	LB 0241/0967
Mary Francis Harms	Key Oil Company	1/8	LB 0243/0810
Daniel J. O'Neill, Trustee for the O'Neill Family Trust et al	Key Oil Company	1/8	LB 0252/1053
Sharon S. O'Neill	Key Oil Company	1/8	LB 0252/1056
Kathleen R. Hooven	Key Oil Company	1/8	LB 0252/1059
Mary F. Harms	Key Oil Company	1/8	LB 0252/1062
Nancy L. Antill	Key Oil Company	1/8	LB 0252/1065
Romarlo, LLC & Robert E. O'Neill	Key Oil Company	1/8	LB 0252/1068
Sharon S. O'Neill	Key Oil Company	1/8	LB 0252/1072
Kathleen R. Hooven	Key Oil Company	1/8	LB 0252/1075
Mary F. Harms	Key Oil Company	1/8	LB 0252/1078
Romarlo, LLC, et al	Key Oil Company	1/8	LB 0252/1081
Nancy I. Antill	Key Oil Company	1/8	LB 0252/1083
Daniel J. O'Neill, Trustee, et al	Key Oil Company	1/8	LB 0252/1086
Clifton G. Valentine & Erma Valentine	Key Oil Company	1/8	LB 0224/0663
Key Oil Company	Antero Resources Appalachian Corp.	*Partial Assignment of Oil and gas Leases	LB 0253/0747

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Environmental Protection

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**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

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- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
G.M. Harris Lease			
G. M. Harris	Coffman Oil & Gas Co.	1/8	LB 0085/0338
Key Oil Company acquired rights under the original lease by mesne and sundry conveyances, mergers, and/or assignments from the original lessee, Coffman Oil & Gas Co.			
Key Oil Company	Antero Resources Appalachian Corp.	*Partial Assignment of Oil and gas Leases	LB 0253/0747
Creed Kuhn et ux Lease			
Creed Kuhn, et ux	Coffman Oil & Gas Co.	1/8	LB 0085/0340
Key Oil Company acquired rights under the original lease by mesne and sundry conveyances, mergers, and/or assignments from the original lessee, Coffman Oil & Gas Co.			
Key Oil Company	Antero Resources Appalachian Corp.	*Partial Assignment of Oil and gas Leases	LB 0253/0747
Emma Snodgrass Lease			
Emma Snodgrass	W. R. Campbell	1/8	LB 0072/0115
Key Oil Company acquired rights under the original lease by mesne and sundry conveyances, mergers, and/or assignments from the original lessee, W.R. Campbell			
Key Oil Company	Antero Resources Appalachian Corp.	*Partial Assignment of Oil and gas Leases	LB 0253/0747

*Partial Assignments to Antero Resources Appalachian Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Antero Resources Appalachian Corporation
 By: Kevin Kilstrom
 Its: Vice President of Production

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Antero Resources
1625 17th Street
Denver, Colorado 80202
Office 303.357.7310
Fax 303.357.7315

August 30, 2012

West Virginia Department of Environmental Protection
Chief, Office of Oil and Gas
Attn: Mr. James Martin
601 57th Street SE
Charleston, WV 25304

RE: Kuhn Unit 1H
Quadrangle: Pullman 7.5'
Ritchie County/Union District, West Virginia

Mr. Martin:

Antero Resources Appalachian Corporation (Antero) is submitting the following application for a new well work permit for the Kuhn Unit 1H horizontal shallow well. As an authorized representative, I certify that Antero has the right to extract, produce or market the oil or gas for all leases through which the Kuhn Unit 1H horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,

Sloane Ford
Landman

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION

Date of Notice Certification: 08/30/2012

API No. 47- 085 -

Operator's Well No. Kuhn Unit 1H

Well Pad Name: John Campbell North Pad

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>506,052m</u> ✓
County:	<u>Ritchie</u>		Northing:	<u>4,336,869m</u>
District:	<u>Union</u>	Public Road Access:	<u>CR 9/7</u>	
Quadrangle:	<u>Pullman 7.5'</u>	Generally used farm name:	<u>Campbell, John A. & Linda J.</u>	
Watershed:	<u>Right Fork of Slab Creek</u>			

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED <small>**Not applicable, Plat Survey was done prior to Implementation of WV Code 22-6A</small></p> <p><input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p>
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Required Attachments:

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Injection Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

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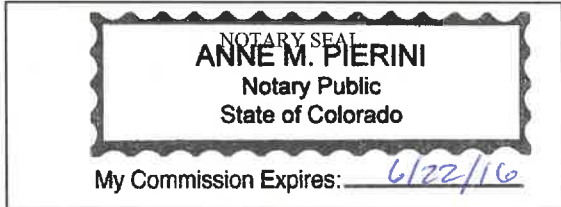
05/31/2024

WW-6AC
(1/12)

Certification of Notice is hereby given:

THEREFORE, I Randy Kloberdanz, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator:	<u>Antero Resources Appalachian Corporation</u>	Address:	<u>1625 17th Street</u>
By:	<u>Randy Kloberdanz</u> <i>Randy Kloberdanz</i>		<u>Denver, CO 80202</u>
Its:	<u>Director of Regulatory & Environmental Affairs</u>	Facsimile:	<u>(303) 357-7315</u>
Telephone:	<u>(303) 357-7310</u>	Email:	<u></u>



Subscribed and sworn before me this 30 day of AUGUST 2012.

Anne M. Pierini Notary Public

My Commission Expires JUNE 22, 2016

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.

Date of Notice: 08/31/2012 Date Permit Application Filed: 08/31/2012

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b), no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner.

Notice is hereby provided to:

SURFACE OWNER(s)
Name: John A. and Linda J. Campbell
Address: 505 Oxford Road
Pullman, WV 26421
Name: _____
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: _____
Address: _____
Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments/Pits)
Name: _____
Address: _____

COAL OWNER OR LESSEE
Name: PLEASE SEE ATTACHMENT
Address: _____

COAL OPERATOR
Name: _____
Address: _____

WATER PURVEYOR(s)/OWNER(s) OF WATER WELL,
 SPRING OR OTHER WATER SUPPLY SOURCE
Name: NONE IDENTIFIED WITHIN 2000'
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE
FIELD
Name: _____
Address: _____

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*Please attach additional forms if necessary.

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Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall also include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No wellpad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such

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factors, if necessary.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

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Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

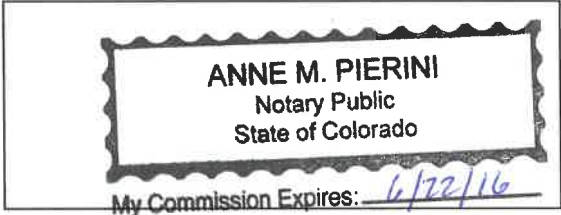
Notice is hereby given by:

Well Operator: Antero Resources Appalachian Corporation
Telephone: 303-357-7310 *Long Klavinsky*
Email: amihalcin@anteroresources.com

Address: 1625 17th Street
Denver, CO 80202
Facsimile: 303-358-7315

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at deprivacyofficer@wv.gov.



Subscribed and sworn before me this 30 day of August, 2012.
Anne M. Pierini Notary Public
My Commission Expires JUNE 22, 2016

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WW-6A Notice of Application Attachment:**Coal Owners:**

Owner: John A. & Linda J. Campbell ✓
Address: 505 Oxford Road
Pullman, WV 26421

Owner: Ruth Villers ✓
Address: 520 Park Drive
Pensboro, WV 26415

Owner: Naomi P. Federkiel ✓
Address: 18 Olive Street
Norwalk, OH 44857

Owner: J.W. Prunty c/o Ruth Villers ✓
Address: 520 Park Drive
Pensboro, WV 26415

Owner: Kermit Conoway, Pearl Cunningham & ✓
Thya Neusbaum, heirs
c/o Melinda Gilbertson
Address: 900 Par Lane
Dell Rapids, SD 57022

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**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL**

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least **TEN (10)** days prior to filing a permit application.

Date of Notice: 04/30/2012 **Date Permit Application Filed:** 08/31/2012

Delivery method pursuant to West Virginia Code § 22-6A-16(b)

- HAND DELIVERY CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: John A. & Linda J. Campbell
Address: 505 Oxford Road
Pullman, WV 26421

Name: _____
Address: _____

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>506,052m</u>
County: <u>Ritchie</u>		Northing: <u>4,336,869m</u>
District: <u>Union</u>	Public Road Access: <u>CR 9/7</u>	
Quadrangle: <u>Pullman 7.5'</u>	Generally used farm name: <u>Campbell, John A. & Linda J.</u>	
Watershed: <u>Right Fork of Slab Creek</u>		

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: Antero Resources Appalachian Corporation
Address: 1625 17th Street
Denver, CO 80202
Telephone: (303) 357-7323
Email: amihalcin@anteroresources.com
Facsimile: (303) 357-7315

Authorized Representative: Ashlie Mihalcin
Address: 1625 17th Street
Denver, CO 80202
Telephone: (303) 357-7323
Email: amihalcin@anteroresources.com
Facsimile: (303) 357-7315

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 08/31/2012 **Date Permit Application Filed:** 08/31/2012

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

- CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)

(at the address listed in the records of the sheriff at the time of notice):

Name: John A. & Linda J. Campbell
Address: 505 Oxford Road
Pullman, WV 26421

Name: _____
Address: _____

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>506,052m</u>
County:	<u>Ritchie</u>		Northing:	<u>4,336,869m</u>
District:	<u>Union</u>	Public Road Access:	<u>CR 9/7</u>	
Quadrangle:	<u>Pullman 7.5'</u>	Generally used farm name:	<u>Campbell, John A. & Linda J.</u>	
Watershed:	<u>Right Fork of Slab Creek</u>			

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator:	<u>Antero Resources Appalachian Corporation</u>	Address:	<u>1625 17th Street</u>
Telephone:	<u>(303) 357-7310</u>		<u>Denver, CO 80202</u>
Email:	<u>amihalcin@anteroresources.com</u>	Facsimile:	<u>(303) 357-7315</u>

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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**CERTIFICATION OF AGREEMENT WITH WVDOH
to fulfill WV Code 22, Article 6A, Section 20**

**OIL AND GAS ROAD
STATEWIDE BONDING AGREEMENT**

THIS AGREEMENT, executed in duplicate, made and entered into this 28 day of February, 2012, by and between the **WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS**, hereinafter called "DEPARTMENT," and Antero Resources Appalachian Corporation, a DELAWARE company, hereinafter called "COMPANY."

WITNESSETH:

WHEREAS, Company has horizontal gas well drilling operations in certain areas of West Virginia; and

WHEREAS, the Department believes that the frequent and repetitive use of certain sections of highways in the State by Company, its contractors, agents, independent contractors or suppliers of drilling materials or drilling equipment, and employees contributes to increased wear and tear to public roads in the state road system in the State, including local roads ("State Owned Roads"); and,

WHEREAS, the Department and Company have entered into this Agreement to satisfy the requirements of the Department's policy entitled "Oil & Gas Road Policy" dated January 3, 2012, as issued by Paul A. Mattox, Jr., Secretary of Transportation / Commissioner of Highways, and any subsequent related policies, hereinafter called "Policy", a copy of which is made a part of this Bonding Agreement and is identified as Attachment 1.

NOW, THEREFORE, for and in consideration of the mutual agreements hereinafter set forth, the parties agree as follows:

I. For purposes of this Bonding Agreement, "Project Transportation Usage" of the Company shall be understood to mean use of one or more State Owned Roads for the delivery and removal of drilling materials and drilling equipment at the site or location of one or more of Company's horizontal gas well pad locations. To the extent reasonably practical, prior to commencing use of a State Owned Road for Project Transportation Usage after January 1, 2011, the Company shall submit to the Department a section or sections of current official WVDOH County Highway maps identifying the exact location of the proposed project and the State Owned Roads that the Company will utilize for the Project Transportation Usage.

II. Company and Department shall within 14 days of the Company's submittal, agree to a list of these sections of State Owned Roads, hereinafter called "Project Roads List", to be utilized for each of Company's projects, identified by route number and milepost; at a time to be mutually agreed to by the parties prior to initial commencement of Project Transportation Usage of a particular State Owned Road on a Project Roads List, the Company and Department will jointly review the condition of the roads and bridges on the Project Roads List. The Department will document the road type and surface condition and general right-of-way width of each section of road on the Project Road List. Either party may supplement this documentation with photographs, video or other evidence of the present condition of the road surface, shoulders, ditches, culverts, bridges or other structures or appurtenances of roads on the Project Road List, as well as approaches to the roads, utility facilities located within or along the right-of-way, or any other condition, including third-party activities, that may affect the duties and responsibilities of the parties under this Agreement. A copy of any such documentation must be made and provided to the other party within ten business days after the joint review of the roads on the Project Roads List.

III. Department shall issue a Project Agreement or Project Permit, as appropriate, to Company to use State Owned Roads and may include any minor or major improvements required of Company prior to, during or after Project with the assignment of responsibilities of

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both parties prior to, during and after the operator has completed well fracturing..

IV. In the Project Agreement/Project Permit, the Department shall not require the use of State Owned Roads other than the roads proposed by Company unless the Department has safety concerns as to the Company's proposed roads. A failure to agree on roads that may otherwise be lawfully used for a particular Project Transportation Usage shall result in the designation of the State Owned Roads proposed by Company, with milepost determinations as designated by Department. This Agreement shall only cover portions of State Owned Roads designated on the Project Roads List.

V. For the duration of Company's Project Transportation Usage of the Stated Owned Roads on the Project Roads List, whether by the Company, its contractors (while working on behalf of Company), agents, independent contractors or suppliers of drilling materials or drilling equipment, or employees, the Company agrees to pay for all reasonable maintenance and repair costs incurred by the Department to repair areas of the State Owned Roads included in the Project Roads List that were directly damaged by Company's Project Transportation Usage, as determined to be reasonably necessary and appropriate by the Department. The Department shall keep a record of all labor performed by Department employees and contractors for such maintenance and repairs and shall send an invoice for the same to Company.

VI. Company shall be responsible for the cost of all maintenance and repairs reasonably necessary to put the existing roadways, bridges and appurtenances on the Project Roads List utilized for the Project Transportation Usage in the condition that existed immediately prior to the Project Transportation Usage. Company shall not be required to pay for maintenance or repairs to put any areas of such roadways, bridges and appurtenances on the Project Roads List in a condition better than the condition that existed immediately prior to the Project Transportation Usage. Company shall also not be required to pay for maintenance or repairs to any areas of these roadways, bridges or appurtenances on the Project Roads List that are not actually utilized for the Project Transportation Usage or for damage not caused by Project Transportation Usage.

VII. Company shall notify the Department in writing of Company's final completion of Project Transportation Usage for particular roadways, bridges and appurtenances on the Project Roads List. Within fourteen days after its receipt of written notification of the completion of the Project Transportation Usage for all roads on a Project Roads List, the Department will review the condition of the roadways, bridges and appurtenances on the Project Roads List actually utilized for the Project Transportation Usage and advise Company of any final repairs reasonably necessary to leave these roads, bridges and appurtenances in a condition reasonably deemed by Department to be equal to their condition prior to commencement of Project Transportation Usage; and, upon completion of all such final repairs by or on behalf of Company and acceptance by Department, the Company shall be released from all further liability for maintenance or repairs to roads, bridges, or appurtenances on said Project Roads List. Any maintenance or repair work under the Project Agreement/Project Permit for roads, bridges or appurtenances on the Project Roads List may be performed by a contractor directly chosen by the Company as approved by the Department, the Department's workforce, or a private contractor hired by the Department through the public bid process in accordance with state law, all of which work shall be subject to the standards and specifications of the Department.

VIII. In order to ensure performance of Company's performance and payment obligations under this Bonding Agreement, the Company shall post a corporate surety bond, hereinafter called "Master Bond", with the Department named as the beneficiary, which form of bond shall be subject to the consent of the Department, not to be unreasonably withheld. The amount and form of the bond shall be in accordance with the Policy as set forth above. However, the amount of the Master Bond does not limit the amount of claims that may be made by the Department against the Company under this Bonding Agreement. The Company shall provide the Master Bond to the Department within one (1) month after the execution of this Bonding Agreement. The Master Bond shall secure the good faith performance of all payment obligations of Company under the terms of this Bonding Agreement respecting the roads, bridges and appurtenances on the Project Roads List for each Project Transportation Usage undertaken by the Company, and shall remain in effect until termination of this Agreement. Company shall not be obligated to provide any other bonds, sureties, or other guarantees of performance to the Department for Company's use of State Owned Roads, except as required in this Agreement.

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IX. Company shall maintain Commercial General Liability Insurance in the amount of two million dollars, with a minimum coverage of one million dollars per occurrence, for personal injury or death to persons, or for property damage, resulting from Company's Project Transportation Usage and shall present evidence of such insurance to Department upon request.

X. Company's usage of State Owned Roads under the Project Agreement/Project Permit shall comply with all applicable Federal, State and local laws and regulations including, but not limited to, to the extent applicable, the National Environmental Policy Act, Section 404 of the Clean Water Act, Section 106 of the National Historic Preservation Act, Rare, Threatened and Endangered Species Act, Section 401 Water Quality Certification, and hazardous waste requirements. Further, upon reasonable written request of Department, Company shall furnish Department with acceptable documentation of such compliance which is in the possession of the Company.

XI. Company shall defend, indemnify and hold Department harmless from and against any and all losses, damage, and liability, and from all claims for damages on account of or by reason of bodily injury, including death, which may be sustained, or claimed to be sustained, by any person or persons, including employees of Department, and from and against any and all claims, losses or liabilities for damages to property, arising out of the negligent or willful acts or omissions of Company, its agents, independent contractors and suppliers of drilling materials or drilling equipment, employees and contractors, in the performance of all Project Transportation Usage activities undertaken pursuant to this Agreement (collectively, "claims"). The Company shall not be responsible to indemnify, defend or hold harmless Department for any claims caused by the negligent or willful acts or omissions of the Department or its agents, employees and contractors or third parties not performing work at the direction of Company or delivering drilling equipment or drilling materials, including water, for use by or for company.

XII. If a provision of this Agreement is or becomes illegal, invalid or unenforceable in any jurisdiction, that shall not affect the validity or enforceability of any other provision of this Agreement; or the validity or enforceability in other jurisdictions of that or any other provision of this Agreement.

XIII. Department shall give Company a minimum of thirty days written notice of default under the terms of this Bonding Agreement and the opportunity to cure this default during such thirty-day period. If a default is not cured to the satisfaction of Department, or provision acceptable to Department is not made for a cure, Department may then elect to terminate this Bonding Agreement in whole or in part, and may in addition exercise its rights under the Master Bond or seek any other lawful relief available. Company may terminate this Bonding Agreement upon thirty days written notice to Department for any reason. In the event Company terminates this Agreement for any reason, it shall be liable for the repair and maintenance costs set forth above for prior Project Transportation Usage.

XIV. Nothing herein shall be construed to mean that Company shall have any jurisdiction or control over any public roads in the state road system.

XV. Company, its contractors, agents, employees and suppliers shall at all times be subject to applicable provisions of state and federal law, including without limitation laws requiring operation of vehicles in accordance with legal size and weight restrictions and posted weight limits. Oversize/overweight permits for vehicle or loads not otherwise conforming with law must be obtained in accordance with law; Department agrees to work in good faith with Company to review and grant (where authorized by law) such permits in a timely manner upon request by Company.

XVI. This Bonding Agreement shall be construed and enforced in accordance with the laws of the State of West Virginia, as they may be amended.

XVII. This Bonding Agreement shall be binding upon the successors and assigns of each party hereto.

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IN WITNESS WHEREOF, the parties hereto have caused this Bonding Agreement to be executed by their duly authorized officers effective as of the date first above written.

WEST VIRGINIA DEPARTMENT OF
TRANSPORTATION,
DIVISION OF HIGHWAYS

Doreen Baria
Witness

By: Marilyn A. Murphy
State Highway Engineer

AUSTINO RESOURCES APPALACHIAN CORPORATION

Rachel Bouchard
Witness

By: A. Schupp
Title: VP ACCOUNTING and ADMINISTRATION

(To be executed in duplicate)

APPROVED AS TO FORM THIS
8th DAY OF March, 2012

J. M. [Signature]
ATTORNEY LEGAL DIVISION
WEST VIRGINIA DEPARTMENT
OF HIGHWAYS

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Form WW-9 Additives Attachment

SURFACE INTERVAL

1. Fresh Water
2. Soap –Foamer AC
3. Air

INTERMEDIATE INTERVAL

STIFF FOAM RECIPE:

- 1) 1 ppb Soda Ash / Sodium Carbonate-Alkalinity Control Agent
- 2) 1 ppb Conqor 404 (11.76 ppg) / Corrosion Inhibitor
- 3) 4 ppb KLA-Gard (9.17 ppg) / Amine Acid Complex-Shale Stabilizer
- 4) 1ppb Mil Pac R / Sodium Carboxymethylcellulose-Filtration Control Agent
- 5) 12 ppb KCL / Potassium Chloride-inorganic Salt
- 6) Fresh Water 80 bbls
- 7) Air

PRODUCTION INTERVAL

1. Alpha 1655
Salt Inhibitor
2. Mil-Carb
Calcium Carbonate
3. Cottonseed Hulls
Cellulose-Cottonseed Pellets – LCM
4. Mil-Seal
Vegetable, Cotton & Cellulose-Based Fiber Blend – LCM
5. Clay-Trol
Amine Acid Complex – Shale Stabilizer
6. Xan-Plex
Viscosifier For Water Based Muds
7. Mil-Pac (All Grades)
Sodium Carboxymethylcellulose – Filtration Control Agent
8. New Drill
Anionic Polyacrylamide Copolymer Emulsion – Shale Stabilizer
9. Caustic Soda
Sodium Hydroxide – Alkalinity Control
10. Mil-Lime
Calcium Hydroxide – Lime
11. LD-9
Polyether Polyol – Drilling Fluid Defoamer
12. Mil Mica
Hydro-Biotite Mica – LCM

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13. Escaid 110
Drilling Fluid Solvent – Aliphatic Hydrocarbon
14. Ligco
Highly Oxidized Leonardite – Filtration Control Agent
15. Super Sweep
Polypropylene – Hole Cleaning Agent
16. Sulfatrol K
Drilling Fluid Additive – Sulfonated Asphalt Residuum
17. Sodium Chloride, Anhydrous
Inorganic Salt
18. D-D
Drilling Detergent – Surfactant
19. Terra-Rate
Organic Surfactant Blend
20. W.O. Defoam
Alcohol-Based Defoamer
21. Perma-Lose HT
Fluid Loss Reducer For Water-Based Muds
22. Xan-Plex D
Polysaccharide Polymer – Drilling Fluid Viscosifier
23. Walnut Shells
Ground Cellulosic Material – Ground Walnut Shells – LCM
24. Mil-Graphite
Natural Graphite – LCM
25. Mil Bar
Barite – Weighting Agent
26. X-Cide 102
Biocide
27. Soda Ash
Sodium Carbonate – Alkalinity Control Agent
28. Clay Trol
Amine Acid complex – Shale Stabilizer
29. Sulfatrol
Sulfonated Asphalt – Shale Control Additive
30. Xanvis
Viscosifier For Water-Based Muds
31. Milstarch
Starch – Fluid Loss Reducer For Water Based Muds
32. Mil-Lube
Drilling Fluid Lubricant

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**List of Anticipated Additives Used for Fracturing or
Stimulating Well**

Additives	Chemical Abstract Service Number (CAS #)
Fresh Water	7732-18-5
2 Phosphobutane 1,2,4 tricarboxylic acid	37971-36-1
Ammonium Persulfate	7727-54-0
Anionic copolymer	proprietary
Anionic polymer	proprietary
BTEX Free Hydrotreated Heavy Naphtha	64742-48-9
Cellulase enzyme	(Proprietary)
Demulsifier Base	(Proprietary)
Ethoxylated alcohol blend	Mixture
Ethoxylated Nonylphenol	68412-54-4
Ethoxylated oleylamine	26635-93-8
Ethylene Glycol	107-21-1
Glycol Ethers	111-76-2
guar gum	9000-30-0
Hydrogen Chloride	7647-01-0
Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8
Isopropyl alcohol	67-83-0
liquid, 2,2-dibromo-3-nitrilopropionamide	10222-01-2
Microparticle	proprietary
Petroleum Distillates (BTEX Below Detect)	64742-47-8
Polyacrylamide	57-55-6
Propargyl Alcohol	107-19-7
Propylene Glycol	57-55-6
Quartz	14808-60-7
Sillica, crystalline quartz	7631-86-9
Sodium Chloride	7647-14-5
Sodium Hydroxide	1310-73-2
Sugar	57-50-1
Surfactant	68439-51-0
Suspending agent (solid)	14808-60-7
Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7



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JOHN CAMPBELL NORTH DRILL PAD FINAL SITE DESIGN, CONSTRUCTION PLAN, & EROSION & SEDIMENT CONTROL PLANS ANTERO RESOURCES APPALACHIAN CORPORATION

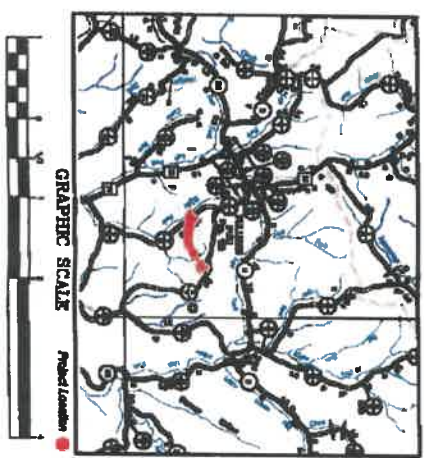


STATE PLAT NO. (BY ACTING) OWNER	LATITUDE	LONGITUDE
Center of Pad	37° 52' 11" N	81° 46' 11" W
Center of Road (OVERSTREET) (Right of Way)	37° 52' 00" N	81° 46' 00" W



FLOODPLAIN CONDITIONS

DO SITE CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN:	NO
PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR:	NO
HEC-RAS STUDY COMPLETED:	N/A
FLOODPLAIN SHOWN ON DRAWINGS:	N/A
FEMA MAP NUMBERS FOR SITE:	540802220C
ACREAGE OF CONSTRUCTION IN FLOODPLAIN:	N/A



The drawings, construction notes, and reference documents attached hereto have been prepared in accordance with the West Virginia Code of State Rules, Division of Environmental Protection, Office of Civil and State Geology. The information reflects a preliminary field point. The completed design shall be subject to review by the State Geologist.

West Virginia Coordinate System of 1983
State Plane Grid North
Elevation MANDOS
Established By Survey
Date GPS

05/31/2024

APPROXIMATE TAX PARCELS: 1978.3
UNION DISTRICT
TAX ID - PCL 28 John Campbell
108 37208 120.28 Acres
(Subtotal area from Proposed Antero Road = 1,202.5 Ac, 2.08 Acres)
(Subtotal area from Proposed Drill Pad = 2.08 Acres)
(Subtotal area from Proposed Final, PE = 3.12 Acres)
(Subtotal area from Proposed Spad Pits = 1.19 Acres)

Well Tables			
Prop. Well Proposed Well #1 Well Depth: 1000 FT Well Diameter: 8" (10" O.D.) Well Location: 120' from edge of disturbance to westward, perpendicular distance, industry or residential, road or roadway.	Prop. Well Proposed Well #2 Well Depth: 1000 FT Well Diameter: 8" (10" O.D.) Well Location: 120' from edge of disturbance to westward, perpendicular distance, industry or residential, road or roadway.	Prop. Well Proposed Well #3 Well Depth: 1000 FT Well Diameter: 8" (10" O.D.) Well Location: 120' from edge of disturbance to westward, perpendicular distance, industry or residential, road or roadway.	Prop. Well Proposed Well #4 Well Depth: 1000 FT Well Diameter: 8" (10" O.D.) Well Location: 120' from edge of disturbance to westward, perpendicular distance, industry or residential, road or roadway.

Well Location Restrictions:

- All Pad and Fracture Fr. Wells comply with the following restrictions.
- 200' from any existing well or development existing used for human or domestic purposes.
- 250' occupied dwelling or farm greater 2000 SF used for poultry or dairy restricted from the center of the pad.
- 100' from edge of disturbance to westward, perpendicular distance, industry or residential, road or roadway.
- 500' from edge of disturbance to roadway perpendicular street dimensions.
- 100' of surface or greater water flows to a public water supply.

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DATE	REVISIONS
5-4-2012	REVISED QUANTITIES & SPILL AREA
6-28-2012	REVISED WELL TABLES & AFFECTED PARCELS DATA

MISS Utility of West Virginia
1-800-245-4848
West Virginia State Law
(Section XIV: Chapter 24-C)
Requires that you dig in the state of
West Virginia.
ITS THE LAW!!



Know what's below.
Call before you dig.

<p>ANTERO THANK YOU FOR ANTERO RESOURCES APPALACHIAN CORP</p>	<p>Honor Sincere 1002 Bros. Engineers Civil, Mining, Environmental and Consulting Engineering 400 10th Street, Suite 200 Parkersburg, West Virginia 26101-4400</p>	<p>Allegheny Surveys, Inc. 172 Thompson Drive Bridgeport, WV 26330 (304) 648-6035</p>
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COVER SHEET/LOCATION MAP
**JOHN CAMPBELL NORTH
DRILL PAD SITE**
UNION DISTRICT
RITCHIE COUNTY, WV

Handwritten notes: 8-10-12

Schedule of Quantities
Well Site: John Campbell North Drill Pad & Frac. Water Pit

1.	UNIT	QUANTITY	UNIT PRICE	TOTAL
1. Clearing, Grubbing, E&S Controls				
A. Clearing & Grubbing	AC	6.28	\$	
B. Timber Removal	AC	3.80	\$	
C. 24" S&I Stock or 6" Fence	LF	1,864	\$	
D. Super 800 Fence	LF	288	\$	
2. Excavation (Cut Only)				
A. Construction Entrance	EA	2	\$	
B. Drill Pad	CY	7,382	\$	
C. Frac Water Pit	CY	20,208	\$	
D. Access Roads	CY	7,278	\$	
E. Topsoil	CY	4,331	\$	
F. Diversion Ditch	LF	732	\$	
G. Roadside Ditch	LF	1,594	\$	
H. Ditch Lining (Access Road)	SY	478	\$	
I. Rip Rap	SY	418	\$	
J. Hydraulic Handing (TRM)	SY	54	\$	
K. 4" PVC Conduits	LF	1,000	\$	
L. 24" Slump	EA	12	\$	
3. Stone				
A. 6" x 6" Rip Rap (Main/Outlets)	TONS	14	\$	
B. #8 Stone (Ditch Channel)	TONS	3.5	\$	
4. Aggregate Subgrading				
A. Drill Pad 40 MIL Layer	SY	7,421	\$	
B. Drill Pad 10oz Felt	SY	7,421	\$	
C. Drill Pad 1" Minus Crusher Run Aggregate (2")	TONS	704	\$	
D. Drill Pad 3" Clean Aggregate (2")	TONS	1,759	\$	
E. Drill Pad 6" Stone (2")	TONS	848	\$	
F. Access Roads 4" Minus Crusher Run Aggregate (2")	SY	2,803	\$	
G. Access Roads Gravel/Grass Felt (1/8 200)	SY	2,803	\$	
5. Fertilizer Water Pit Layer - 80 ml				
A. (Dry) 80 ml Layer	SY	6,804	\$	
B. 10 oz. Felt Under Layment	SY	6,804	\$	
6. Road Curbs (6' Total)				
A. 16" CURB (6')	LF	180	\$	
7. A. Hydro Seeding				
A. Hydro Seeding	AC	6.65	\$	
8. Fence and Gates				
A. Woven Wire Fence	LF	994	\$	
B. 16' Chain Link Gate	EA	1	\$	
9. Remediation	AC	Edt	\$	
TOTAL				

- NOTES:**
1. TOPSOIL QUANTITY FOR THIS SITE IS ESTIMATED AT A UNIFORM THICKNESS OF 6" OVER THE ENTIRE EXCAVATED AREA. ACTUAL QUANTITY MAY VARY.
 2. AREAS RECEIVING LIME MATERIAL AND SYNTHETIC MATERIALS (TRM) ARE TO BE SEEDED, LIMED AND FERTILIZED PRIOR TO INSTALLATION OF MATERIALS.

FRAC PIT VOLUMES				
ELEVATION	BARRELS	GALLONS	ACRE-FT	UNINCISED ACRE-FT
979 (BOTTOM)	0	0	0	0
981	4,045	169,882	0.521	0
983	9,965	418,556	1.285	0
985	17,163	720,903	2.212	0
987	25,753	1,081,702	3.320	1.108
989	35,850	1,505,801	4.621	2.409
991	47,568	1,999,018	6.132	3.920
993	61,015	2,562,817	7.885	5.653
995	76,287	3,204,292	9.834	7.622
997	93,480	3,926,459	12.050	9.838
999 (TOP BERM)	112,691	4,733,343	14.526	12.314

GRADING VOLUMES			
DESCRIPTION	CUT (CY)	FILL (CY)	NET (CY)
MAIN ACCESS ROAD 1	274	275	-1
MAIN ACCESS ROAD 2	3,810	869	2,941
DRILL PAD	8,807	18,221	-9,414
FRAC PIT	21,717	14,371	7,346
FRAC PIT ACCESS ROAD	4,410	2	4,408
SPOIL PADS	0	5,282	-5,282
TOTAL	39,018	39,020	-2

LOD AREAS (ACRES)		
DESCRIPTION	AREA	
MAIN ACCESS ROAD 1	0.28	
MAIN ACCESS ROAD 2	2.04	
FRAC PIT ACCESS ROAD	0.70	
DRILL PAD	2.65	
FRAC PIT	3.12	
WASTE & SPOIL PADS	1.19	
TOTAL	9.98	
TOTAL WOODED AREA	3.80	

GRADING	
CUT SLOPE	2:1
FILL SLOPE	2:1
FRAC PIT INTERIOR	3:1
PAD CONTAINMENT BERM SLOPE	1.5:1
CUT SWELL FACTOR	1.05
FILL SHRINK FACTOR	1.00
PAD ELEVATION:	1014.0'

The earthwork quantities provided are an estimate for consideration. The quantities shown may be greater or less than actually excavated. The engineer is not responsible for variances from the estimated quantities and does not certify to their accuracy.

DATE	REVISIONS
5-4-2012	REVISED QUANTITIES & SPOIL AREA
6-9-2012	REVISED LOD TABLE

SCHEDULE OF QUANTITIES
JOHN CAMPBELL NORTH DRILL PAD SITE
UNION DISTRICT
RITCHIE COUNTY, WV



Honor
180a Bros. Engineers
Civil, Mining, Environmental and Consulting Engineering
140 South Third Street, Post Office Box 260,
Clarksburg, West Virginia, 26301 (304) 861-6164

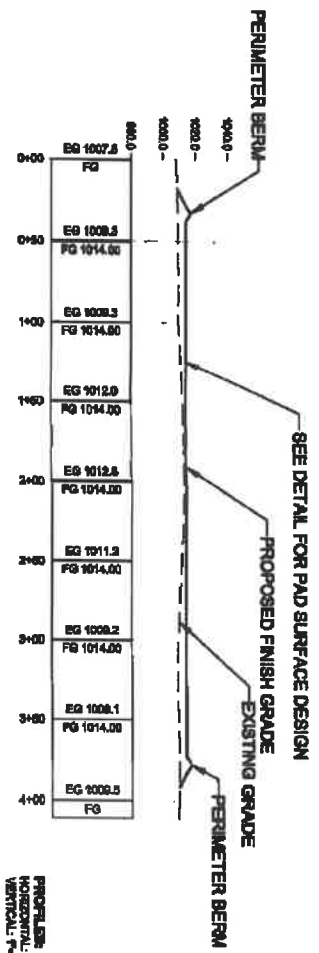


Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 848-5035



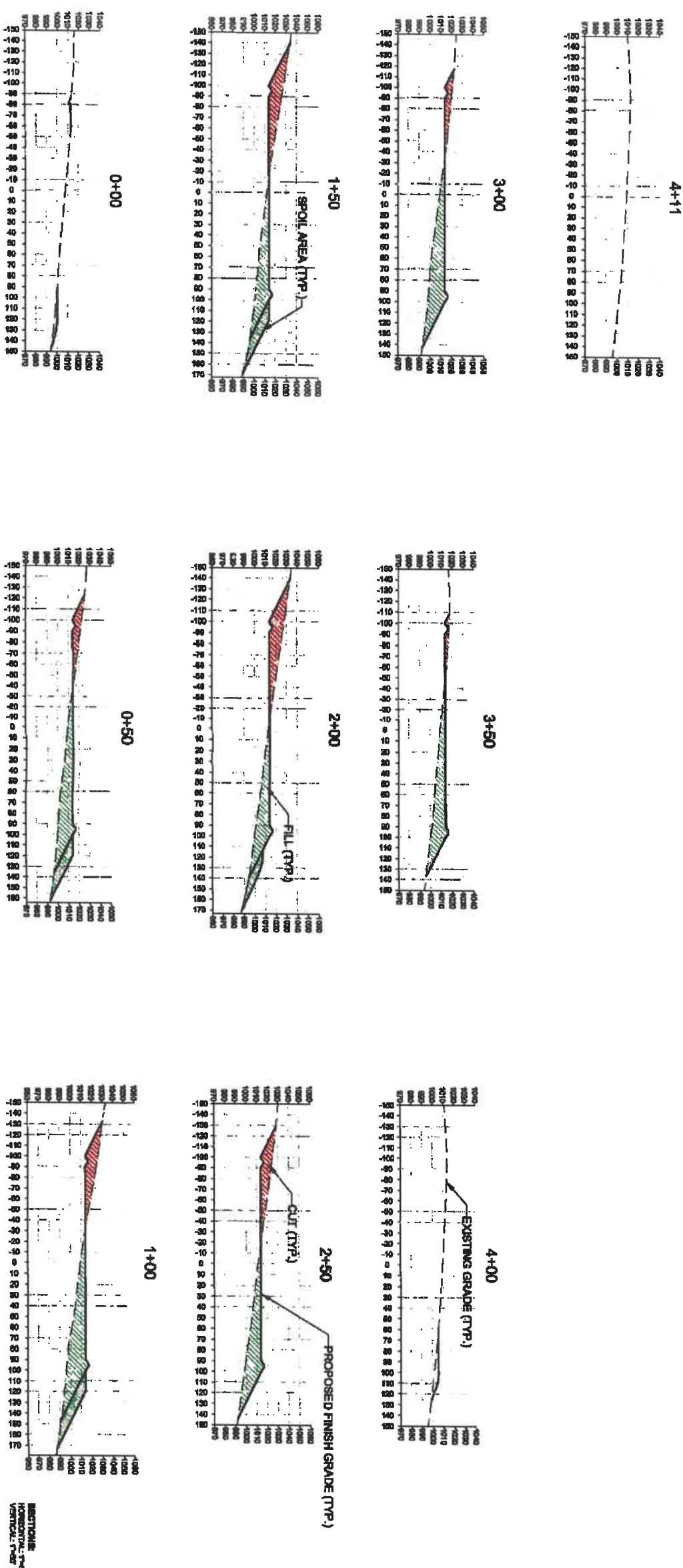
Environmental Engineering
1-2-2012

DRILL PAD PROFILE & CROSS SECTIONS 0+00 - 4+11



PROFILES:
HORIZONTAL: 1"=40'
VERTICAL: 1"=4'

05/31/2024



DATE	REVISIONS
5-8-2012	REVISED QUANTITIES & SPOIL AREA

DRILL PAD PROFILE & CROSS SECTIONS
JOHN CAMPBELL NORTH
DRILL PAD SITE
UNION DISTRICT
RITCHIE COUNTY, WV



THIS DOCUMENT
PREPARED FOR
ANTERO RESOURCES
BY
ANTHONY J. BROWN, P.E.

Hornor
Since 1908
Bros. Engineers
Civil, Mining, Environmental and
Consulting Engineering
140 South Third Street, Post Office Box 200,
Chaplin, West Virginia, 26029 (204) 622-2222

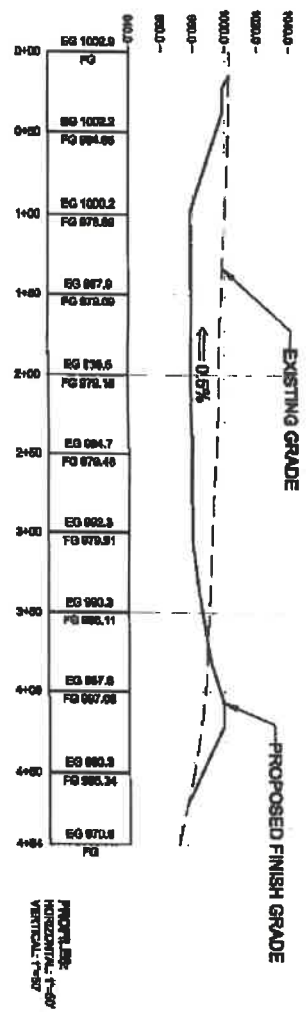


Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 848-8035

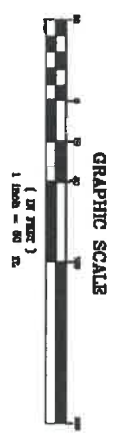
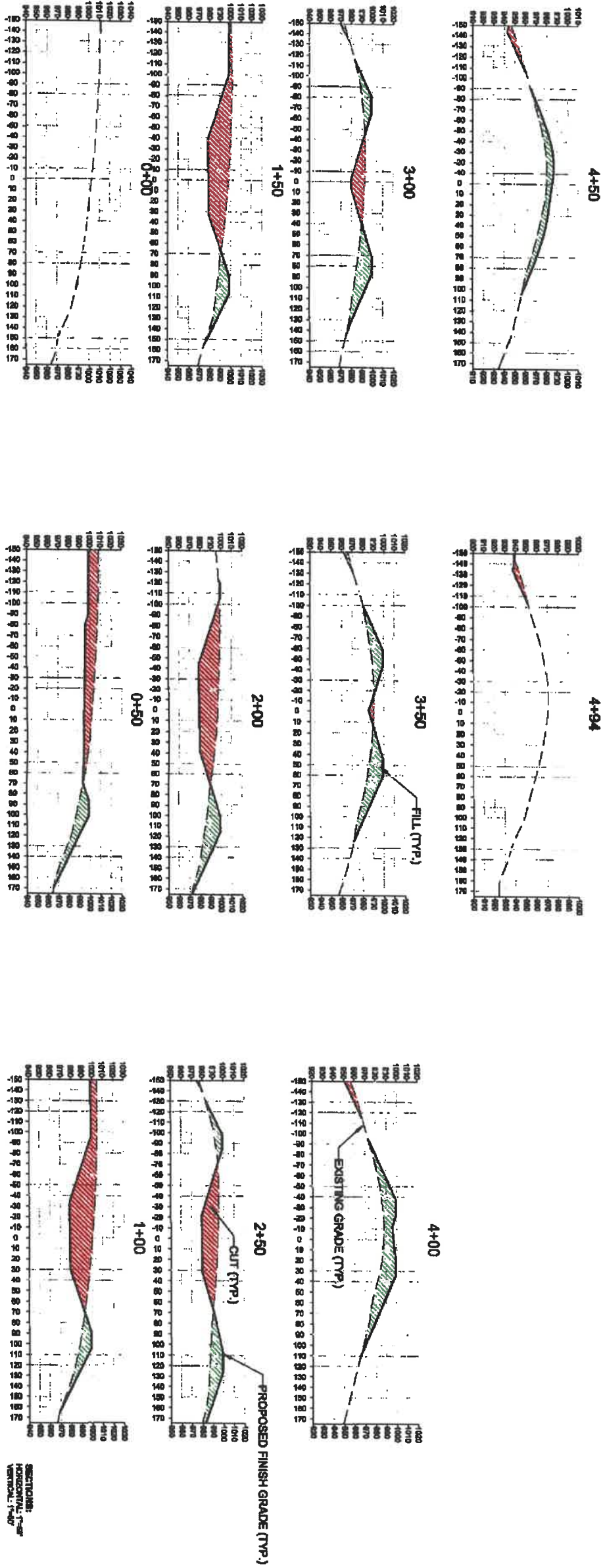


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FRAC PIT PROFILE & CROSS SECTIONS 0+00 - 4+94



05/31/2024



DATE	REVISIONS

FRAC PIT PROFILE & CROSS SECTIONS
**JOHN CAMPBELL NORTH
DRILL PAD SITE**
UNION DISTRICT
RITCHIE COUNTY, WV



THIS DOCUMENT IS
PREPARED FOR
ANTERO RESOURCES
BY ANTERO CONSULTANTS

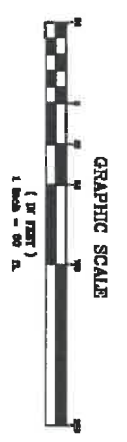
Hornor
SINCE 1928
Bros. Engineers
Civil, Mining, Environmental and
Consulting Engineering
140 South Third Street, First Floor Box 200
Martinsburg, West Virginia, 26001-2000
304-263-2222



Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 848-8035



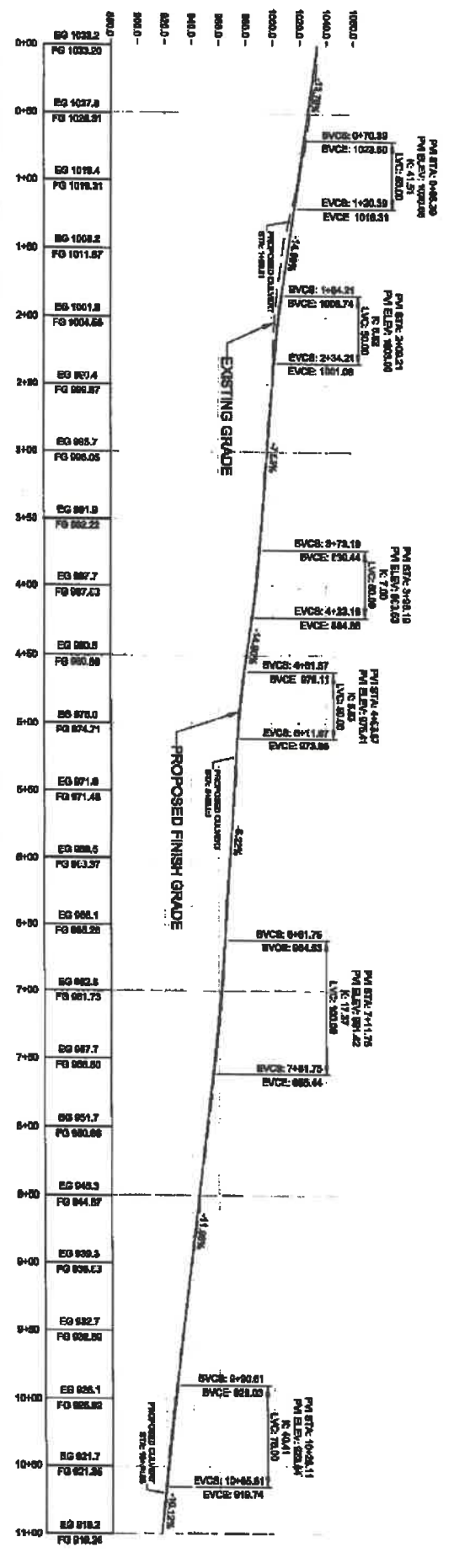
05/31/2024



CONTRACTOR SHALL INSTALL DITCH
CHECK DAMS FROM STATION 3+00 - 11+00
AS SHOWN ON PLAN

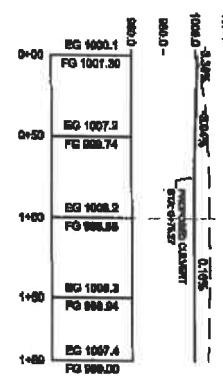
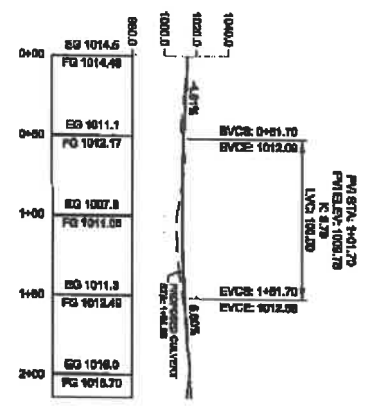
MAIN ACCESS ROAD-2
(ACCESS TO SOUTH PAD)

CONTRACTOR SHALL INSTALL DITCH LINING AS FOLLOWS:
JULTE MATTING = 0%-4%
SYNTHETIC MATTING (TRIM) = 4%-10%
6\"/>



MAIN ACCESS ROAD

FRAC. PIT ACCESS ROAD

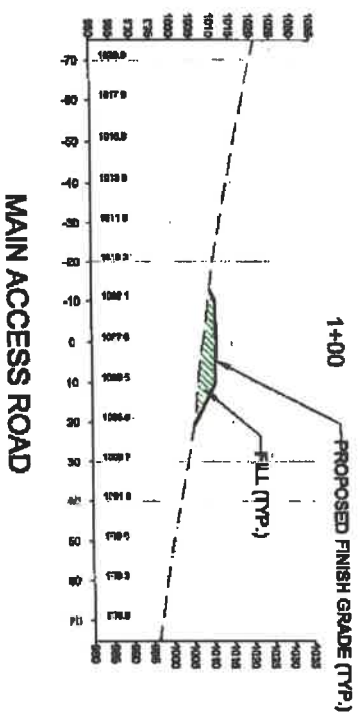
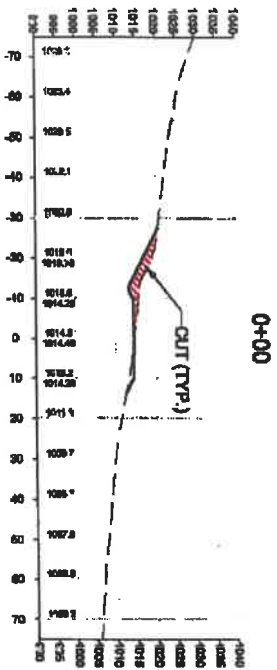
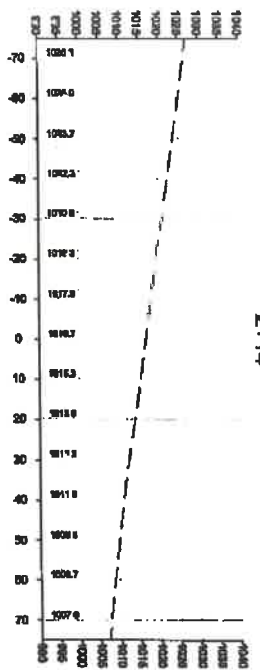


05/31/2024

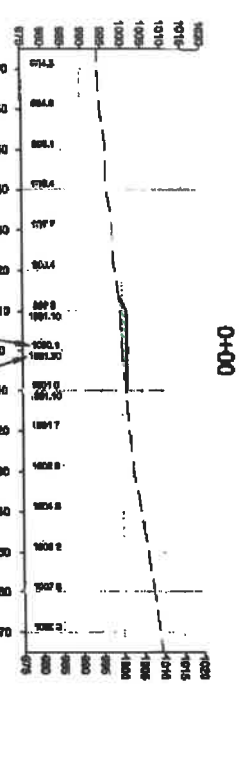
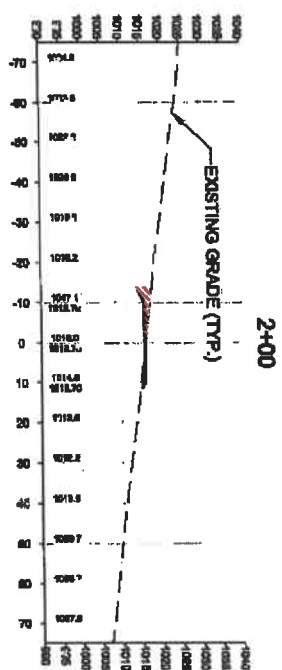
DATE	REVISIONS

<p>ACCESS ROADS PROFILES JOHN CAMPBELL NORTH DRILL PAD SITE UNION DISTRICT RITCHIE COUNTY, WV</p>	<p>AMTERO RESOURCES</p>	<p>THIS DOCUMENT AND ITS CONTENTS ARE UNCLASSIFIED</p>	<p>Hornor Since 1908 Bros. Engineers Civil, Mining, Environmental and Consulting Engineering 100 South Third Street, Post Office Box 304, Charmers, West Virginia, 25921 (304) 624-6100</p>		<p>Allegheny Surveys, Inc. 172 Thompson Drive Bridgeport, WV 26330 (304) 848-6036</p>	
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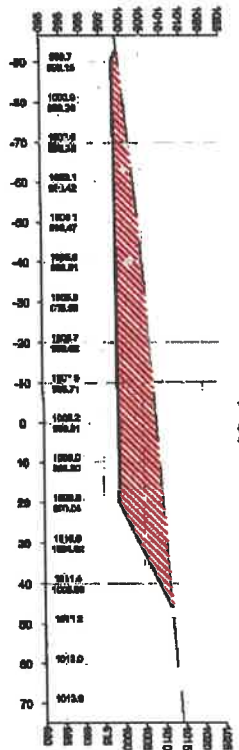
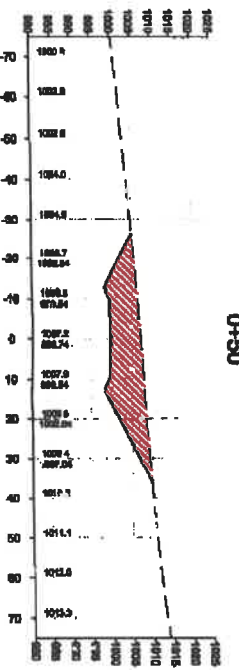
MAIN & FRAC PIT ACCESS ROAD CROSS SECTIONS 0+00 - 2+14 & 0+00 - 0+80



MAIN ACCESS ROAD



FRAC PIT ACCESS ROAD



DATE	REVISIONS

ACCESS ROADS CROSS SECTIONS
JOHN CAMPBELL NORTH
DRILL PAD SITE
 UNION DISTRICT
 RITCHIE COUNTY, WV



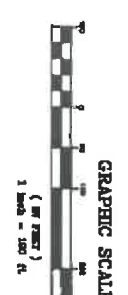
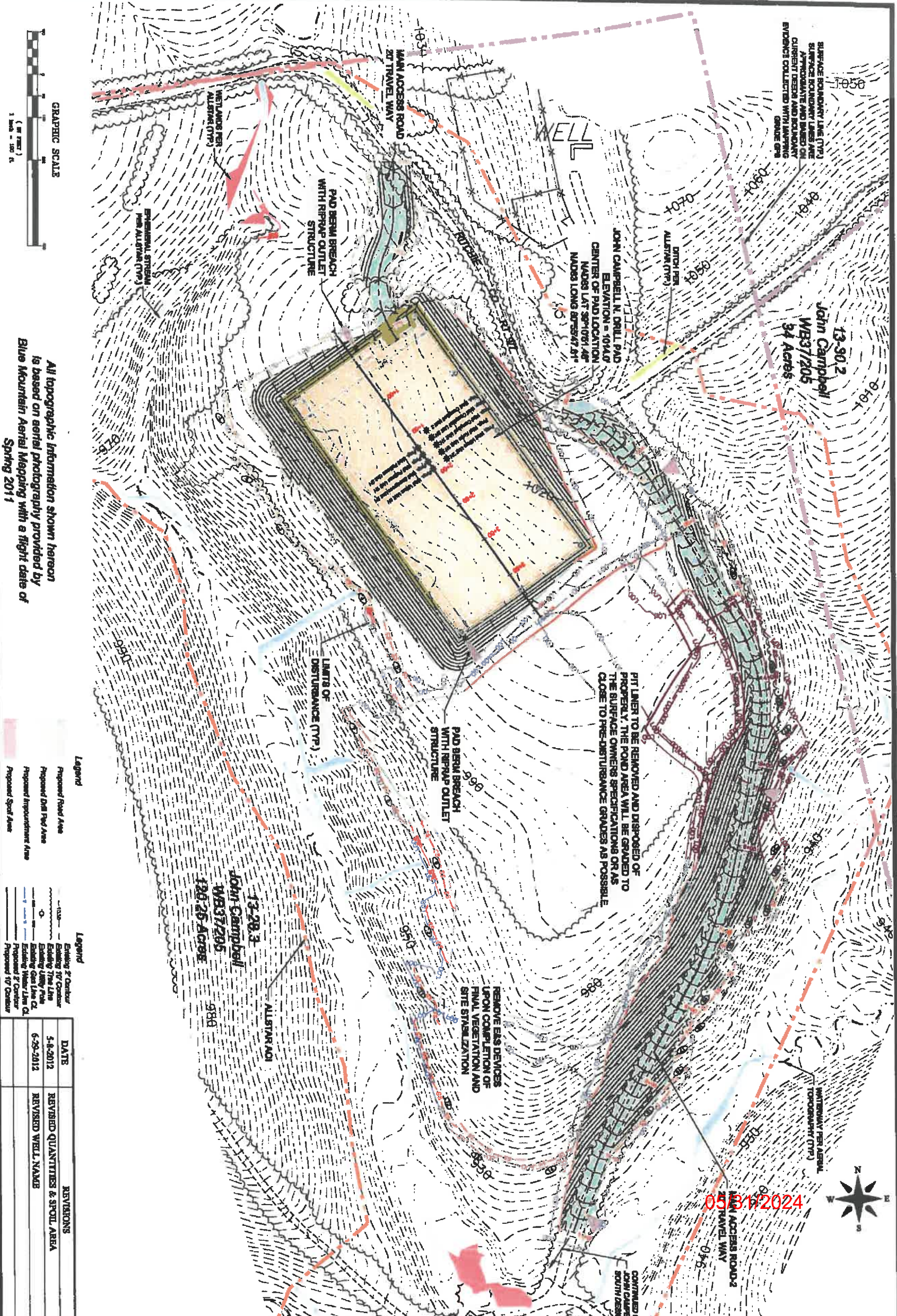
Hornor
 Since 1908 Bros. Engineers
 Civil, Mining, Environmental and Consulting Engineering
 140 South Hill Street, Post Office Box 200, Chesapeake, West Virginia, 25825 (304) 281-2222



Allegheny Surveys, Inc.
 172 Thompson Drive
 Bridgeport, WV 26330
 (304) 848-5035

05/31/2024

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All topographic information shown herein is based on aerial photography provided by Blue Mountain Aerial Mapping with a flight date of Spring 2011

Legend	
	Proposed Road Area
	Proposed Dam Foot Area
	Proposed Impoundment Area
	Proposed Spill Area

Legend	
	Existing 2' Contour
	Existing 10' Contour
	Existing 20' Contour
	Existing 40' Contour
	Existing 60' Contour
	Existing 80' Contour
	Existing 100' Contour
	Existing 120' Contour
	Existing 140' Contour
	Existing 160' Contour
	Existing 180' Contour
	Existing 200' Contour

DATE	REVISIONS
5-8-2012	REVISED QUANTITIES & SPILL AREA
6-28-2012	REVISED WELL NAME

<p>RECLAMATION PLAN JOHN CAMPBELL NORTH DRILL PAD SITE UNION DISTRICT RITCHIE COUNTY, WV</p>		<p>Hornor Since 1902 Bros. Engineers Civil, Mining, Environmental and Consulting Engineering 100 South Rice Street, Post Office Box 224 Chickadee, West Virginia, 26030 (304) 648-5035</p>		<p>Allegheny Surveys, Inc. 172 Thompson Drive Bridgport, WV 26330 (304) 648-5035</p>	
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